



# SPEC<sup>®</sup> CFP2006 Result

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## Hewlett-Packard Company

SPECfp<sup>®</sup>\_rate2006 = 181

HP Integrity rx7640 (1.6GHz/18MB Dual-Core Intel Itanium 2)

SPECfp\_rate\_base2006 = 174

CPU2006 license: 03

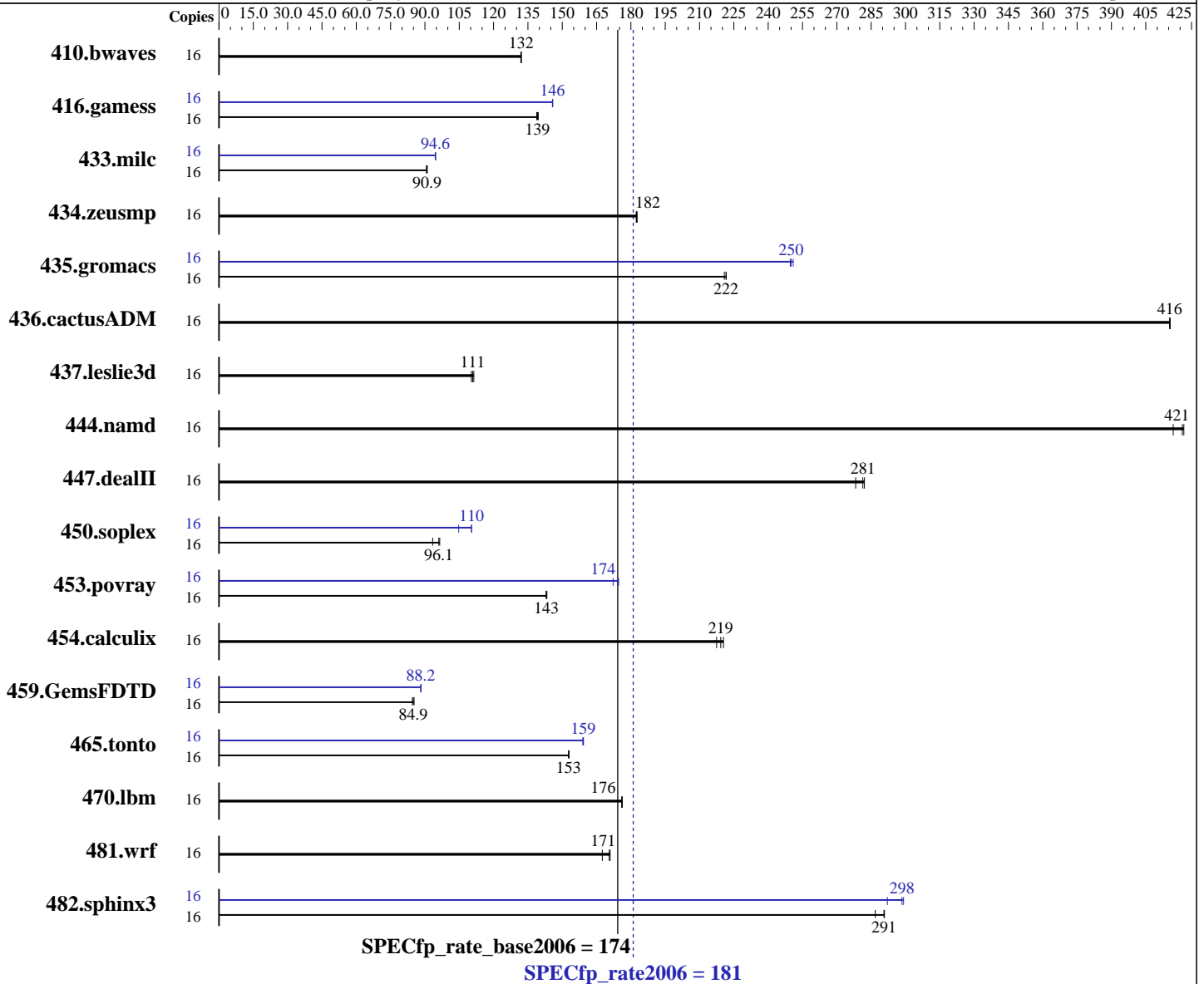
Test date: Sep-2006

Test sponsor: Hewlett-Packard Company

Hardware Availability: Sep-2006

Tested by: Hewlett-Packard Company

Software Availability: Sep-2006



### Hardware

CPU Name: Dual-Core Intel Itanium 2 9040  
 CPU Characteristics: 1.6GHz/18MB, 533MHz FSB  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 8 chips, 2 cores/chip  
 CPU(s) orderable: 1-8 chips  
 Primary Cache: 16 KB I + 16 KB D on chip per core  
 Secondary Cache: 1 MB I + 256 KB D on chip per core

### Software

Operating System: HPUX11i-TCOE B.11.23.0609  
 Compiler: HP C/aC++ Developer's Bundle C.11.23.12  
 HP Fortran90 Compiler B.11.23.32  
 Auto Parallel: No  
 File System: vxfs  
 System State: Multi-user  
 Base Pointers: 32-bit  
 Peak Pointers: 32-bit  
 Other Software: None

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L3 Cache: 9 MB I+D on chip per core  
Other Cache: None  
Memory: 64 GB (32x2GB DIMMs)  
Disk Subsystem: 73GB 15K RPM SCSI  
Other Hardware: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	<b><u>1647</u></b>	<b><u>132</u></b>	1648	132	1646	132	16	<b><u>1647</u></b>	<b><u>132</u></b>	1648	132	1646	132
416.gamess	16	2256	139	2245	140	<b><u>2250</u></b>	<b><u>139</u></b>	16	2150	146	2147	146	<b><u>2149</u></b>	<b><u>146</u></b>
433.milc	16	1614	91.0	1621	90.6	<b><u>1616</u></b>	<b><u>90.9</u></b>	16	1554	94.5	1551	94.7	<b><u>1553</u></b>	<b><u>94.6</u></b>
434.zeusmp	16	<b><u>798</u></b>	<b><u>182</u></b>	797	183	799	182	16	<b><u>798</u></b>	<b><u>182</u></b>	797	183	799	182
435.gromacs	16	517	221	<b><u>515</u></b>	<b><u>222</u></b>	515	222	16	<b><u>457</u></b>	<b><u>250</u></b>	458	250	455	251
436.cactusADM	16	<b><u>460</u></b>	<b><u>416</u></b>	460	415	460	416	16	<b><u>460</u></b>	<b><u>416</u></b>	460	415	460	416
437.leslie3d	16	<b><u>1357</u></b>	<b><u>111</u></b>	1351	111	1364	110	16	<b><u>1357</u></b>	<b><u>111</u></b>	1351	111	1364	110
444.namd	16	308	417	304	422	<b><u>305</u></b>	<b><u>421</u></b>	16	308	417	304	422	<b><u>305</u></b>	<b><u>421</u></b>
447.dealII	16	<b><u>651</u></b>	<b><u>281</u></b>	649	282	658	278	16	<b><u>651</u></b>	<b><u>281</u></b>	649	282	658	278
450.soplex	16	1429	93.4	1383	96.5	<b><u>1389</u></b>	<b><u>96.1</u></b>	16	1274	105	<b><u>1209</u></b>	<b><u>110</u></b>	1209	110
453.povray	16	595	143	<b><u>595</u></b>	<b><u>143</u></b>	594	143	16	494	172	<b><u>488</u></b>	<b><u>174</u></b>	487	175
454.calculix	16	607	217	599	220	<b><u>602</u></b>	<b><u>219</u></b>	16	607	217	599	220	<b><u>602</u></b>	<b><u>219</u></b>
459.GemsFDTD	16	1991	85.3	<b><u>2000</u></b>	<b><u>84.9</u></b>	2009	84.5	16	1925	88.2	<b><u>1925</u></b>	<b><u>88.2</u></b>	1923	88.3
465.tonto	16	1030	153	1029	153	<b><u>1030</u></b>	<b><u>153</u></b>	16	990	159	988	159	<b><u>989</u></b>	<b><u>159</u></b>
470.lbm	16	<b><u>1248</u></b>	<b><u>176</u></b>	1248	176	1249	176	16	<b><u>1248</u></b>	<b><u>176</u></b>	1248	176	1249	176
481.wrf	16	1067	168	<b><u>1048</u></b>	<b><u>171</u></b>	1046	171	16	1067	168	<b><u>1048</u></b>	<b><u>171</u></b>	1046	171
482.sphinx3	16	1087	287	<b><u>1073</u></b>	<b><u>291</u></b>	1072	291	16	1068	292	<b><u>1045</u></b>	<b><u>298</u></b>	1042	299

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

The system had the September 2006 HP-UX 11i v2 Technical Computing Operating Environment (TCOE) and compilers installed, along with the following patches:

```

PHSS_34858 linker + fdp cumulative patch
PHSS_34853 Math Library Cumulative Patch
PHSS_34854 Integrity Unwind Library
PHSS_34855 HP C Compiler (A.06.12)
PHSS_34856 aC++ Compiler (A.06.12)
PHSS_34857 u2comp/be/plugin library patch
PHSS_34395 FORTRAN I/O Library [libIO77]
PHSS_34397 FORTRAN Intrinsics [libF90 B.11.23.17]
PHSS_34399 Fortran Product Patch, v3.1 to v3.1.1
PHKL_34020 Perfmon enhancements and Itanium Dual-Core

```

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## Operating System Notes (Continued)

The following kernel tunables were set, in addition to the defaults set by the Technical Computing OE:

```
dbc_max_pct=20
dbc_min_pct=20
maxdsiz=3221225472
maxssiz=401604608
```

## Platform Notes

The system was configured as a single partition with 2 cells and 4 processors (8 cores) per cell. Memory was configured as 50% local and 50% interleaved.

The following config file entry was used to bind processes to cells using the HP-UX "mpsched" utility:  
submit = let "MYNUM=\$SPECCOPYNUM" ; let "LDOM=\\$MYNUM/8" ; mpsched -l \\$LDOM \$command

## Base Compiler Invocation

C benchmarks:  
/opt/ansic/bin/cc -Ae

C++ benchmarks:  
/opt/aCC/bin/aCC -Aa

Fortran benchmarks:  
/opt/fortran90/bin/f90

Benchmarks using both Fortran and C:  
/opt/ansic/bin/cc -Ae /opt/fortran90/bin/f90

## Base Portability Flags

```
453.povray: -DSPEC_CPU_NEED_INVHYP
454.calculix: -DSPEC_CPU_NOZMODIFIER
481.wrf: -DNOUNDERSCORE +noppu
```

## Base Optimization Flags

C benchmarks:  
+Ofaster +Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M -Wl,-N

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## Base Optimization Flags (Continued)

C++ benchmarks:

+Ofaster +Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M -Wl,-N

Fortran benchmarks:

+Ofaster -Wl,-a,archive\_shared -Wl,+pd,64M -Wl,+pi,64M -Wl,-N

Benchmarks using both Fortran and C:

+Ofaster(-hp\_cc) +Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M +Ofaster(-hp\_f90) -Wl,-N

## Peak Compiler Invocation

C benchmarks:

/opt/ansic/bin/cc -Ae

C++ benchmarks:

/opt/aCC/bin/aCC -Aa

Fortran benchmarks:

/opt/fortran90/bin/f90

Benchmarks using both Fortran and C:

/opt/ansic/bin/cc -Ae /opt/fortran90/bin/f90

## Peak Portability Flags

453.povray: -DSPEC\_CPU\_NEED\_INVHYP  
454.calculix: -DSPEC\_CPU\_NOZMODIFIER  
481.wrf: -DNOUNDERSCORE +noppu

## Peak Optimization Flags

C benchmarks:

433.milc: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M +Onoparmsoverlap -Wl,-N

470.lbm: basepeak = yes

482.sphinx3: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M +Onoparmsoverlap

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## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: basepeak = yes

447.dealII: basepeak = yes

450.soplex: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M +Onoparmsoverlap -Wl,-N

453.povray: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: +Ofaster -Wl,-a,archive\_shared -Wl,+pd,64M -Wl,+pi,64M  
+Odataprefetch=direct -Wl,-N

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
-Wl,-a,archive\_shared -Wl,+pd,64M -Wl,+pi,64M  
+Odataprefetch=direct -Wl,-N

465.tonto: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
-Wl,-a,archive\_shared -Wl,+pd,64M -Wl,+pi,64M  
+Odataprefetch=direct

Benchmarks using both Fortran and C:

435.gromacs: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2)  
+Ofaster(-hp\_cc) +Otype\_safety=ansi -Wl,-a,archive\_shared  
-Wl,+pd,64M -Wl,+pi,64M +Onoparmsoverlap +Ofaster(-hp\_f90)

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090715.06.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.html)



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You can also download the XML flags source by saving the following link:

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